## Introduction

Kentucky and all other states are required by U.S. EPA to propose designations of areas in response to the 24-hour fine particulate standard ($PM_{2.5}$) by December 18, 2007. It is Kentucky's understanding that U.S. EPA will then take the states' recommendations, review relevant information and propose the federal designations during the summer of 2008, with the designations being finalized by December, 2008.

EPA provided guidance for states to use in determining designations of areas under this standard. EPA's presumptive for making designations of attainment/nonattainment included provisions that any county with a monitored violation and any county that may have an impact on that violation also be considered. EPA further provided a list of nine different criteria to be used in evaluating whether an area should be designated as attainment (meeting) the standard, or nonattainment (not meeting the standard). If states wish to differ from EPA's presumptive then those nine criteria must be addressed to provide arguments for exclusion, or inclusion.

The information in this document outlines areas in violation of the standard or that may be potentially impacted by another area in violation. It compares those areas based on EPA's nine criteria listed below.

- **Emissions in areas potentially included versus excluded from the nonattainment area**
- **Air quality in potentially included versus excluded areas**
- **Population density and degree of urbanization including commercial development**
- **Traffic and commuting patterns**
- **Expected growth (including extent, pattern and rate of growth)**
- **Meteorology (weather/transport patterns)**
- **Geography/topography (mountain ranges or other air basin boundaries)**
- **Jurisdictional boundaries (counties, air districts, etc.)**
- **Level of control of emission sources.**

Kentucky has fine particulate monitors in 19 counties. Only Jefferson County has monitoring data in violation of the 24-hour fine particulate standard based on 2004-2006 monitoring data. However, if U.S. EPA

approves the exceptional monitoring data request submitted by the Louisville Metro Air Pollution Control District (LMAPCD), then not even Jefferson County will be showing a violation. Ambient monitoring data from Clark County, Indiana, shows a violation and those areas need to be reviewed.

Kentucky chose to evaluate and provide information to U.S. EPA on all counties within a metropolitan statistical area (MSA) or adjacent counties that may have been deemed to have emissions that might contribute to a violation. In the past, U.S. EPA had required review of all areas within an MSA and Kentucky determined that this level of review would remain sufficient for emission contribution evaluation. In addition to Jefferson County, nineteen (19) counties have the potential to be designated nonattainment due to being part of an MSA where at least one monitor is showing a violation. They include:

- **Boone, Campbell, Kenton, Bracken, Grant, Gallatin & Pendleton Counties (part of the Greater Cincinnati/Northern Kentucky MSA) – violations of the standard are occurring in the Ohio portion of the MSA;**
- **Christian and Trigg Counties (part of the Clarksville, Tennessee/Hopkinsville, Kentucky MSA);**
- **Bullitt, Oldham, Jefferson, Trimble, Hardin, Henry, Nelson, Shelby, Spencer, and Meade Counties (part of the Louisville MSA and adjoining area)**

The Kentucky Division for Air Quality determined that the most current emissions data to use for this purpose was found in the (VISTAS ASIP modeling inventories. In the past designation processes, the National Emissions Inventory (NEI) had been used, however, U.S. EPA did not have this data compiled in sufficient time to be used in this determination. The VISTAS ASIP inventory is the basis for modeling that will be used to provide attainment demonstrations to EPA for the annual PM2.5 Standard. This emissions data will provide a standardized basis, basically a level playing field, for determining emissions contribution from the various counties and states being reviewed.

The 2002 VISTAS ASIP inventory was used to compare industry and mobile emissions for VOC, $NO_x$, $SO_x$, Ammonia, and $PM_{2.5}$ for the metropolitan areas potentially impacted by this standard in Kentucky. Kentucky also reviewed area source emissions of Ammonia and $PM_{2.5}$. The reason for

including area sources for these two pollutants was that both pollutants can potentially have high area source associated emissions contributions.

In addition, both this agency and the local Louisville Metro Air Pollution Control District, have submitted separate requests to U.S. EPA for data to be considered for exclusion from National Ambient Air Quality Standard (NAAQS) determination in accordance with 40 C.F.R. 50.14(c)(3)(i). Ambient air monitoring data from 2004 through 2007 has been made available for public comment, and now awaits determination and ultimately possible exclusion due to exceptional events.

The possible acceptance by U.S. EPA of the Jefferson County request would exclude data impacted by a number of exceptional events in 2004-2006. In the table below, the 2004 through 2006 data has been recalculated with consideration of these potential exclusions and is shown in the following:

| PM2.5 24-hour Standard/With All Data (parts per billion)* | | | | |
|---|---|---|---|---|
| Site Name | 2004 | 2005 | 2006 | 2004-2006 |
| Southwick | 31 | 43 | 36 | 36.7 |
| Wyandotte | 31 | 40 | 36 | 35.7 |
| Barret | 29 | 43 | 37 | 36.3 |
| Watson | 26 | 37 | 33 | 32.0 |
| | | | | |
| PM2.5 24-hour Standard/Excluding Flagged Data (parts per billion)* | | | | |
| Site Name | 2004 | 2005 | 2006 | 2004-2006 |
| Southwick | 29 | 37 | 30 | 32.0 |
| Wyandotte | 28 | 34 | 31 | 31.0 |
| Barret | 28 | 35 | 29 | 30.7 |
| Watson | 26 | 30 | 28 | 28.0 |

* data provided by Louisville Metro APCD

Finally, this submittal is broken down into regional MSAs, with each county within that MSA being discussed individually. At the end of each MSA, is a series of figures, tables, and graphs providing monitoring data, wind speed and direction information for the area, population data, and emissions contributions. The last section of the submittal has back trajectory analyses for many of the “high value” days for each area. This data was used to determine the conclusions and recommendations for each county.